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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/067,910 | 02/08/2002 | David W. Boertjes | 71493-997 /pw | 8036 |
| 7380 | 7590 | 04/13/2006 | EXAMINER | |
| SMART & BIGGAR P.O. BOX 2999, STATION D 900-55 METCALFE STREET OTTAWA, ON K1P5Y6 CANADA | | | LI, SHI K | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2613 | |
| DATE MAILED: 04/13/2006 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/067,910

Applicant(s)

BOERTJES ET AL.

Examiner

Shi K. Li

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 15 and 39-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 15 and 39-44 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/13/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 44 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 44 recites the limitation "basic functional components" in lines 1-2 of the claim. It is unclear the meaning of "basic functional component". In other words, given an optical device, the specification does not teach how to determine whether the optical device is a basic functional component or not.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 15, 39-40, 42 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. (K. Ho et al., "Method for Crosstalk Measurement and Reduction in Dense WDM Systems", Journal of Lightwave Technology, Vol. 14, No. 6, June 1996) in view of Seydnejad et al. (S. Seynejad et al., "Estimation of the SRS Crosstalk on Pilot-Tones in WDM Systems Using a Dither Transfer Matrix", OFC 2001, 17-22 March 2001).

Regarding claims 1-2 and 15, Ho et al. discloses in FIG. 1 a crosstalk monitoring scheme. FIG. 1 teaches multiplexed optical signal comprising wavelength channels $\lambda_1, \dots, \lambda_i, \dots, \lambda_N$, wherein each channel is impressed with a dither frequency f_i . FIG. 1 teaches tone power monitor where tones $f_i, f_{i-1}, f_{i+1}, \dots$, etc. are measured. Ho et al. teaches in Equation (5) crosstalk level $XT_{k,i}$ which is equivalent to β_{ij} of instant claim. The difference between Ho et al. and the claimed invention is that Ho et al. does not teach to use the method and apparatus for measuring crosstalk caused by non-linear process of transmission medium. However, the method and apparatus of Ho et al. is capable of measuring crosstalk of any kind regardless of the cause of the crosstalk. To strengthen the rejection, the Examiner cites Seydnejad et al. for teaching that SRS causes crosstalk. Seydnejad et al. also suggests to use dithers for measuring crosstalk caused by SRS. One of ordinary skill in the art would have been motivated to combine the teaching of Seydnejad et al. with the crosstalk monitoring scheme of Ho et al. because measuring crosstalk caused by SRS helps engineering transmission systems, e.g., determining distance between adjacent wavelengths. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use crosstalk monitoring scheme of Ho et al. for measuring crosstalk caused by SRS, as taught by Seydnejad et al., because it helps engineering transmission systems.

Regarding claim 3, Ho et al. teaches in FIG. 3 to control the output characteristics of the multiplexed optical signal by weight adjustment.

Regarding claims 39-40, Seydnejad et al. teaches SRS.

Regarding claim 42, Official Notice is taken that it is well known in the art that a photodiode converts optical signal into photocurrent which is converted into voltage by trans-

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impedance amplifier. As indicated by Ho in equation (4), the photocurrent presents channel power.

Regarding claim 44, Ho et al. teaches in FIG. 1 multiplexer and demultiplexer which re optical devices.

5. Claims 41 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ho et al. and Seydnejad et al. as applied to claims 1-3, 15, 39-40, 42 and 44 above, and further in view of Fatehi et al. (U.S. Patent 5,892,606).

Ho et al. and Seydnejad et al. have been discussed above in regard to claims 1-3, 15, 39-40, 42 and 44. Regarding claims 41, Seydnejad et al. teaches in first paragraph, Introduction, that dithers are also used for channel identification. The difference between Ho et al. and Seydnejad et al. is that Ho et al. and Seydnejad et al. do not teach using a plurality of dithers for each wavelength channel. Fatehi et al. teaches in FIG. 3 to use a plurality of tones for tagging a wavelength channel. One of ordinary skill in the art would have been motivated to combine the teaching of Fatehi et al. with the modified crosstalk monitoring scheme of Ho et al. and Seydnejad et al. because using a plurality of tones reduces the number of different tones needed for tagging a given number of wavelengths and reduces cost. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a plurality of tones for tagging each wavelength channel, as taught by Fatehi et al., in the modified crosstalk monitoring scheme of Ho et al. and Seydnejad et al. because using a plurality of tones reduces the number of different tones needed for tagging a given number of wavelengths and reduces cost.

Response to Arguments

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6. Applicant's arguments with respect to claims 1-3, 15 and 39-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

skl
12 April 2006



Shi K. Li
Patent Examiner

Appl. No. 10/067910

Method of WDM Channel Tagging and Monitoring, and Apparatus

REPLACEMENT SHEET

1/9

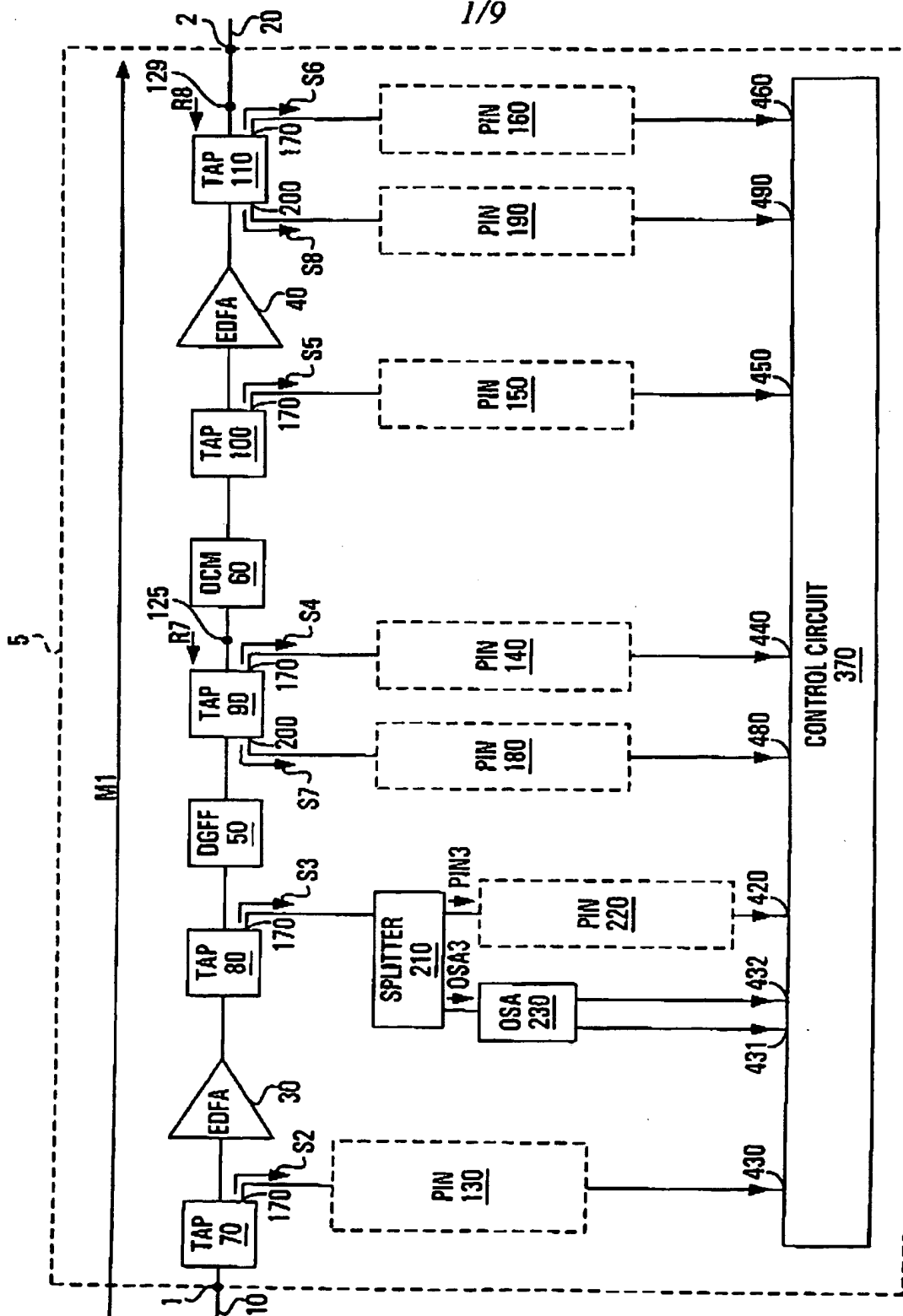


FIG. 1

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Method of WDM Channel Tagging and Monitoring, and Apparatus

REPLACEMENT SHEET

2/9

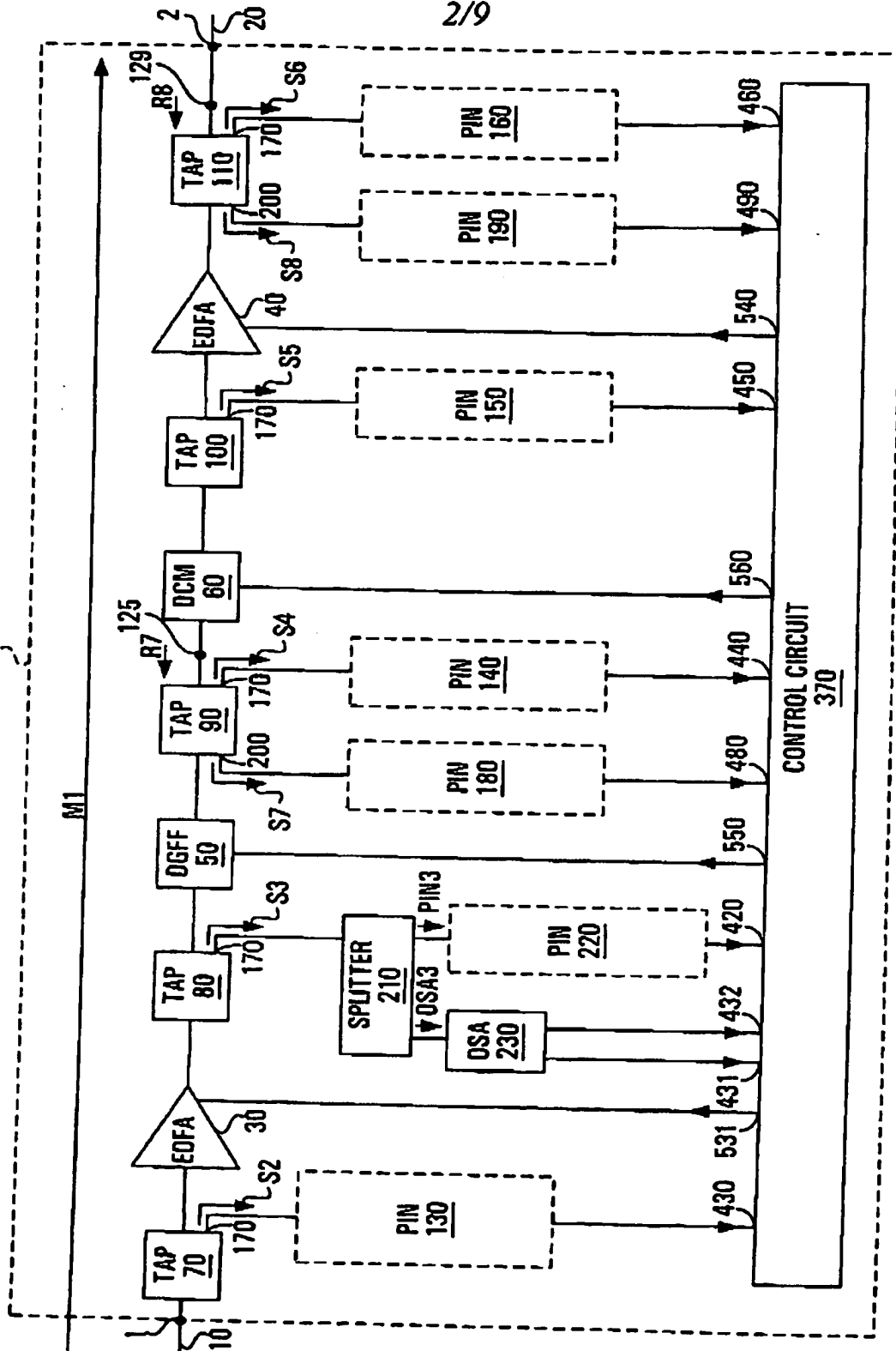


FIG. 2A

Appl. No. 10/067910

Method of WDM Channel Tagging and Monitoring, and Apparatus

REPLACEMENT SHEET

3/9

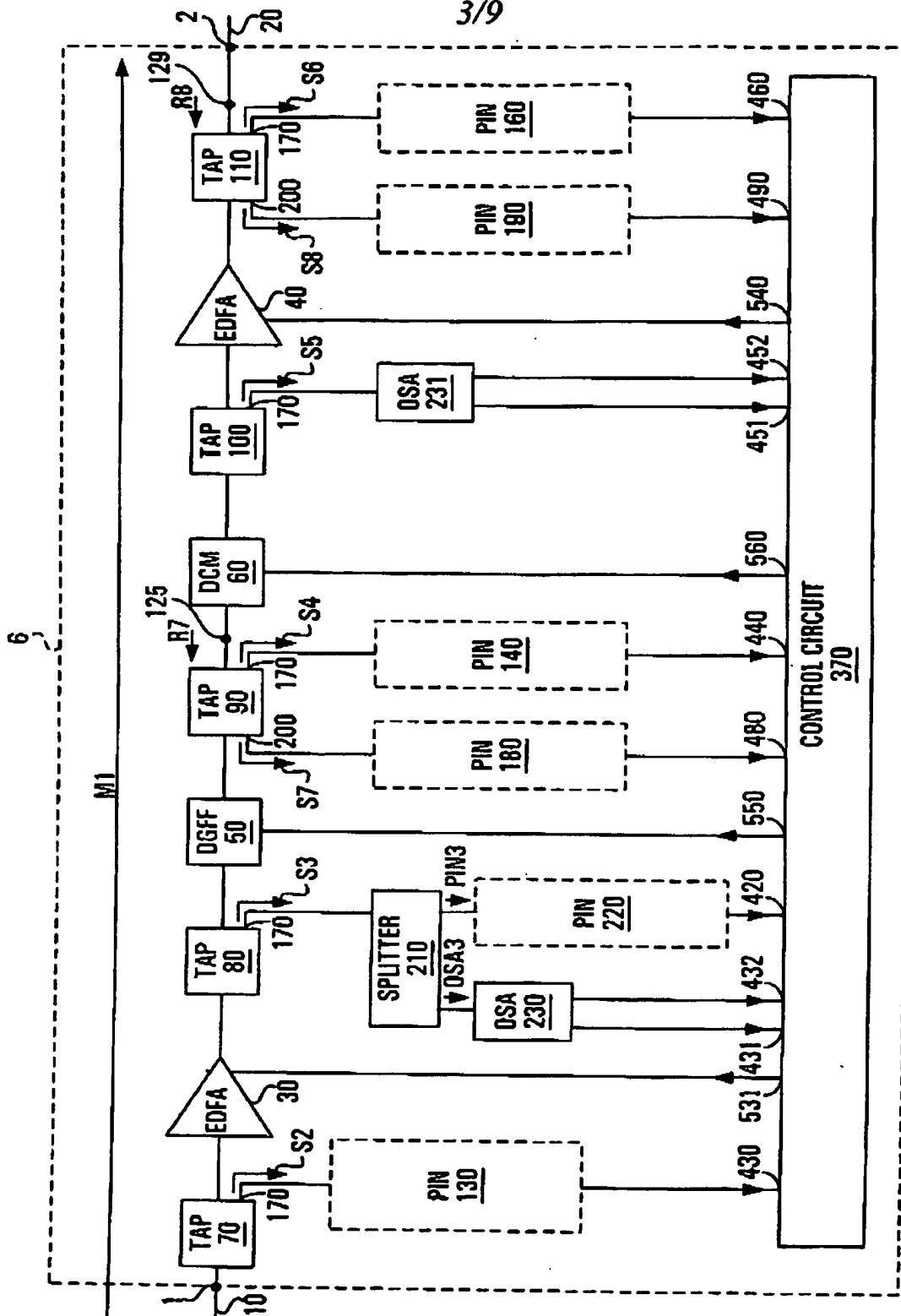


FIG.2B